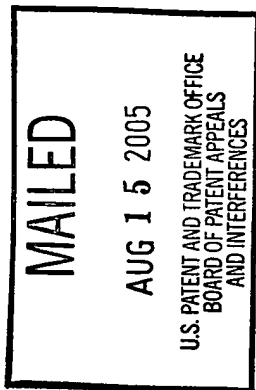


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.



UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT WILLIAM BRUCE and JOHN DOUGLAS EVANS, SR.

Appeal No. 2005-1818
Application No. 09/624,810

ON BRIEF

Before GARRIS, WARREN and PAWLIKOWSKI, Administrative Patent Judges.

GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal which involves claims 1-10.

The subject matter on appeal relates to an electron beam physical vapor deposition coating apparatus. With reference to the appellants' drawing, the apparatus 10 comprises a coating chamber 12, a crucible 56 within the coating chamber, a coating material 26 surrounded by and contained within the crucible, an electron beam gun 30, and an electron beam

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projected onto the surface of the coating material by the electron beam gun wherein the electron beam defines a beam pattern having a higher intensity at the interface of the surface of the coating material with the crucible than at a central region of the surface of the coating material. This appealed subject matter is adequately represented by independent claim 1 which reads as follows:

1. An electron beam physical vapor deposition coating apparatus comprising:

a coating chamber at an elevated temperature and a subatmospheric pressure;

a crucible within the coating chamber;

a coating material surrounded by and contained within the crucible, the coating material having a surface exposed by the crucible;

an electron beam gun; and

an electron beam projected onto the surface of the coating material by the electron beam gun, the electron beam defining a beam pattern having a higher intensity at an interface of the surface of the coating material with the crucible than at a central region of the surface of the coating material.

The reference set forth below is relied upon by the examiner as evidence of unpatentability:

Dietrich et al. (Dietrich)

4,988,844

Jan. 29, 1991

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Claims 1-4, 6, 7, 9 and 10 are rejected under 35 U.S.C. § 102(b) as being anticipated by Dietrich.

Claims 5 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dietrich.

We refer to the brief and reply brief and to the answer (as well to the Office action mailed March 24, 2004 which is referred to in the answer) for a complete exposition of the opposing viewpoints expressed by the appellants and by the examiner concerning these rejections.

OPINION

For the reasons which follow, we cannot sustain either of the rejections advanced on this appeal.

Dietrich discloses an electron beam apparatus which includes means for controlling positions of strike points of the electron beams (e.g., see the paragraph bridging columns 3 and 4). As correctly argued by the appellants and as the examiner seems to understand, the Dietrich patent contains no express teaching of the appealed independent claim feature wherein the electron beam gun produces an electron beam which defines "a beam pattern having a higher intensity at an interface of the surface of the coating material with the crucible than at a central region of the surface of the coating material" (claim 1). To the contrary,

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as illustrated in figures 1-3 of the drawing and disclosed at lines 3-14 as well as lines 32-50 in column 3, the electron beams of patentee's apparatus strike electrode 4 and bath level 9 via beam patterns or semicircular strike areas 26, 27 which are nowhere near the interface of the coating material surface with the crucible. For this reason, the apparatus expressly taught and shown by Dietrich would not include the aforequoted claim feature.

Nevertheless, the examiner finds this claim requirement to be anticipatorily satisfied by the Dietrich apparatus based on the proposition that patentee's apparatus is capable of forming the beam pattern under consideration. As support for this proposition, for example, the examiner refers to lines 30-35 in column 5 of the Dietrich patent wherein patentee teaches:

Electrical signals A and B supplied by sensors **56, 57** are sent to a comparator **60**, which establishes the difference $A - B$ of both signals and steers the radial deflection of the two electron beam guns **10** and **11** with this differential signal.

The examiner's proposition is not well founded. The mere fact that Dietrich's apparatus "steers the radial deflection of the two electron beam guns" (id.) simply does not establish that the apparatus is capable of a radial deflection so extreme as to yield the beam pattern defined by the independent claims on

appeal. Indeed, as properly argued by the appellants, such an extreme radial deflection would prevent the electron beams from striking the electrode in accordance with the Dietrich teaching discussed above. Similarly, the extreme radial deflection proposed by the examiner is not compatible with the beam pattern and intensity distribution shown at graph diagram 38 of figure 3 and discussed in the paragraph bridging columns 4 and 5.

Concerning these matters, the examiner presents the following argument on pages 7 and 8 of the answer:

[T]he Examiner agrees that [sic] with Applicant [sic, Applicants] to the extent that Dietrich's electron beams must strike the electrode 4 in order for Dietrich's apparatus to operate as intended. Yet, as discussed by Dietrich, Dietrich's electron beam control apparatus also provides "electrical signals A and B supplied by sensors 56, 57 are sent to a comparator 60, which establishes the difference A-B of both signals and steers the radial deflection of the two electron beam guns 10 and 11 with this differential signal.". Thus, two facts are apparent from the apparatus of Dietrich:

- i. Dietrich's electron beams must strike the electrode 4
- ii. Dietrich's comparator 60, which establishes the difference A-B of both signals steers the radial deflection of the two electron beam guns 10 and 11 with this differential signal

It is completely plausible that, with the above two required conditions, Dietrich's apparatus would be capable of skewing its intensity profile to encompass a larger area such that "higher intensity at an interface of the surface (9) of the coating material (molten bath 8) with the crucible (6) than at a central region of the surface of the coating material

(molten bath 8)," as claimed by claim 1. This is consistent with Dietrich's goal and operation:

"Thus, for example, the evaporation energy sources of the electron beam can be moved over the surface of the material to be evaporated such that as even a surface temperature as possible is reached on a specific surface, and therefore, a constant evaporation rate is maintained." ([C]olumn 1; lines 18-23)[.]

In other words, Dietrich's goal of a "constant evaporation rate" depends upon a constant temperature of the coating material (molten bath 8) - "as even a surface temperature as possible is reached on a specific surface." What Dietrich is then implying is that irradiation of the electron beams over a larger area would produce "a constant evaporation rate" because "as even a surface temperature as possible is reached on a specific surface". What Dietrich is then implying is that irradiation of the electron beams over a larger area would produce "a constant evaporation rate" because "as even a surface temperature as possible is reached on a specific surface".

This argument is deficient in a number of respects. First, in characterizing as "plausible" his aforequoted capability assertions regarding Dietrich's apparatus, the examiner appears to have engaged in mere conjecture. A finding of anticipation cannot be predicated on mere conjecture. W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 1544, 220 USPQ 303, 314 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Second, in urging that patentee's apparatus "would be capable of skewing its intensity profile to encompass a larger area [i.e., the area of the electrode as well as the material/crucible interface]" (id.), the

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examiner incorrectly believes that "[t]his is consistent with Dietrich's goal and operation" (id.). For the reasons previously explained, a higher beam intensity at the material/crucible interface, in fact, is inconsistent with the teachings of the Dietrich patent. In support of his opposing view, the examiner has improperly relied on the disclosure at lines 18-23 in column 1 of the patent. This disclosure relates to prior art (see the heading at line 12 of column 1) rather than to Dietrich's invention as the examiner believes.

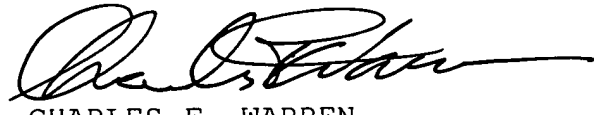
In summary, the examiner has failed to carry his burden of establishing a reasonable basis for believing that Dietrich's apparatus is capable of producing a beam pattern having the intensity characteristics required by the independent claims on appeal. See Ex Parte Levy, 17 USPQ2d 1461, 1463-64 (Bd. Pat. App. & Int. 1990) and Ex parte Skinner, 2 USPQ2d 1788, 1789 (Bd. Pat. App. & Int. 1986). It follows that we cannot sustain the Section 102 rejection of claims 1-4 6, 7, 9 and 10 or the Section 103 rejection of claims 5 and 8 based on the Dietrich reference.

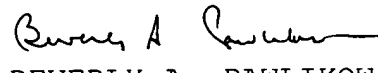
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The decision of the examiner is reversed.

REVERSED


BRADLEY R. GARRIS)
Administrative Patent Judge)


CHARLES F. WARREN)
Administrative Patent Judge)


BEVERLY A. PAWLIKOWSKI)
Administrative Patent Judge)

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BRG:hh

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